

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 24

APPENDIX D:

SUPERUNICOM LIVES !

You may have noticed the new Automated Advisory and Radio-Check system at your Airfield. We've affectionately named the system a *SuperUnicom*.

We encourage you to give your thoughts, comments, suggestions and/or criticism to the FBO at the field. We'll appreciate all of your input; this in turn will help us to better refine the *SuperUnicom* to better meet your needs. We want to make the *SuperUnicom* into the best thing since sliced cheese!

Here's a brief description of what your *SuperUnicom* does and does not do:

Advisories

Advisories are provided in response to pilots making 3 clicks within about 5 miles of the field.

The Advisories are shortened in response to the level of congestion on the frequency. Thus, if the frequency is busy you'll only get the winds at the Airfield. If it's relatively quiet you'll get a complete Advisory with Temp/Dewpoint, Wind, Altimeter, Density Altitude, and Notams if any.

If you get a really short Advisory and you want more information, just hit another 3 clicks right after it finishes; it'll then give you a full Advisory.

When The Frequency Is Jammed

When the frequency is simply too busy the *SuperUnicom* will respond to requests for Advisories with the message "Please Stand By," (just like a well behaved controller!). You'll get no further response for Advisories until the frequency clears a bit, at which time the system gives one Advisory and then returns to its normal operation.

*** Runway Advisory**

(Under Dev.)

The *SuperUnicom* continuously monitors both wind conditions and how busy the airport is, based on the activity level on your airport's frequency. When the winds are calm the Preferred Runway will be recommended. The system will continue to Call the Runway until it observes an ambiguous wind condition. At this point it will cease calling the runway and it will not call the runway again until traffic clears and the wind condition becomes stable.

Radio Checks

Radio Checks are initiated with 4 clicks. The *SuperUnicom* will tell you to transmit a Radio-Check; you should wait for it to finish and then transmit quickly. The *SuperUnicom* will echo back to you your own radio transmission and you'll actually hear how your radio transmissions sound to others!

Warnings

If conditions warrant, the system will insert into its basic Advisory warning messages of *Possible Ground Fog*, *Crosswinds*, and *High Density Altitude*. (Pretty neat, eh?)

Low Power Transmission

We use a low power transmitter such that you will almost always hear another aircraft's transmission right over a *SuperUnicom* transmission. Nonetheless, the inverse square law applies: If you are on the ground right next to the *SuperUnicom*'s low-power transmitter, it will overpower a 25 watt transmission originating from miles away.

Keep in mind that if you are ten miles out at 1,000 ft and the frequency is jammed by aircraft, the *SuperUnicom*'s transmissions won't be heard: *Just wait until you get closer in before you activate!*

Frequency Congestion Sensitive

The system listens to transmissions on the frequency and adapts all of its actions accordingly. We also keep an electronic log of the date, time and length of any transmissions that occur on the frequency. DON'T WORRY, WE DO NOT RECORD THE CONTENT! This lets us know how our system is being used and allows us to refine the *SuperUnicom*'s adaptive behavior.

Pop-Up of Instructions

You will notice that the *SuperUnicom* occasionally provides instructions on how to use it over the frequency.

"XYZ Airfield, Enter Three Clicks for Advisory, Four clicks for Radio-Check."

This message occurs when differing amounts of time have elapsed and based on general frequency congestion. When the system has determined that it's about time to give its instructions it will check the frequency. If it detects no other transmissions it will then "PopUp" this message.

When there is no traffic, ie late at night, the system will remain silent until it detects an inbound aircraft's isolated call to traffic. It will then PopUp its instructions one time.

SuperUnicom Always Listens Before Transmitting

To preclude stomping on other transmissions the *SuperUnicom* listens to the frequency before it transmits. If someone else happens to be transmitting the *SuperUnicom* will defer its own transmission until it detects no other transmissions. We've made it to be very polite on the radio!

Sensors are located Right on the Windsock Pole

The *SuperUnicom* obtains its temperature, wind and altimeter data with sensors right at the windsock. Thus it always gives you true runway conditions. Specifically, winds called reflect a two minute average which is added into the most current reading.

Powered and Always Available 24 Hours a Day

The system automatically recharges directly from the airport's runway lighting circuit. With just occasional power from the runway lights the *SuperUnicom* stays fully powered up and is always available to answer your request, anytime of day or night.

We'll Appreciate Your Comments & Suggestions

We'll look forward to your comments, both good and bad. With your comments we can continue to make the *SuperUnicom* even better!

Thank You,



David Wartofsky

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 25

OVERVIEW

Airport Advisories: Aircraft approaching or departing an airport need to know weather and other information relevant to flight operations. This data typically includes temperature, dewpoint, wind speed and direction, and may also include runway information, and as well as other information. This information is provided over an airport's Common Traffic Advisory Frequency (CTAF):

AIRCRAFT *"XYZ Airfield this is Cessna N86121 inbound request advisories."*

ADVISORY *"XYZ Airfield, temperature 75, dewpoint 65, wind 240 degrees at 12 knots, altimeter 30.10, density altitude 3,500, ILS approach is in use for runway 24."*

AIRCRAFT *"N86121 roger."*

Aircraft Radio-Check: Aircraft departing an airport rely heavily on radio communications during departure and enroute flight operations. Thus, it is critical to flight safety, particularly during IFR operations (Instrument Flight Rules, zero visibility), that the aircraft's communications radio(s) correct operation be confirmed prior to departure. This test, called a "Radio-Check" is performed by the aircraft transmitting a Radio-Check request on the airport's designated communication frequency (CTAF) in the hopes that someone at a ground based radio station, ("Unicom"), or another aircraft happens to be monitoring the frequency and that they are willing or interested in providing confirmation to the aircraft requesting a radio-check by responding with "RADIO CHECK LOUD AND CLEAR." Otherwise and often the pilot must launch with this sometimes life-or-death check incomplete.

AIRCRAFT 1 *"XYZ Airfield, Cessna N86121 requests radio check on frequency 122.80"*

AIRCRAFT 2 (CTAF): *"Mooney N2235E hears N86121 at XYZ Loud & Clear"*

or

AIRCRAFT 1 *"XYZ Airfield, Cessna N86121 requests radio check on frequency 122.80"*

AIRPORT MGR (UNICOM): *"XYZ Airfield base, N86121 you are loud and clear"*

Airports with Control Towers (Controlled Airports): At airports having a control tower inbound and outbound aircraft are either in contact with the control tower, which provides both guidance and advisories (and a defacto Radio-Check), or these aircraft are monitoring the airport's ATIS (Airport Traffic Information System) for advisories. ATIS transmissions are a recording made and updated by control tower personnel on a regular basis which are transmitted continuously on a discrete frequency.

INBOUND:

ATIS BROADCAST *"This is Dulles ATIS India, temperature 75, dewpoint 65, wind 240 degrees at 12 knots, altimeter 30.10, expect runway 24, taxiway bravo is closed for construction."*

AIRCRAFT *"Dulles Tower, this is Cessna N86121 inbound with ATIS India"*

CONTROL TOWER *"Cessna N86121 in radar contact, turn 340 degrees to intercept the localizer for the approach to runway 24."*

AIRCRAFT *"Dulles Tower, N86121 copies 340 degrees for 24."*

OUTBOUND

ATIS BROADCAST *"This is Dulles ATIS India, temperature 75, dewpoint 65, wind 240 degrees at 12 knots, altimeter 30.10, expect runway 24, taxiway bravo is closed for construction."*

AIRCRAFT *"Dulles Tower, this is Cessna N86121 outbound, have ATIS India"*

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 26

CONTROL TOWER "N86121 roger, you are cleared to depart runway 24."

PROBLEM

Control Towers with Limited Hours of Operation: Many tower-controlled facilities are actually only staffed during limited hours of operation. For the pilot operating at any other time at these otherwise busy facilities, this means that advisory services may be unavailable.

SOLUTION

Awake/Asleep Modes: The SuperUnicom offers a feature that by utilizing a remote password entered through radio clicks on the frequency, the Control Tower has the ability to activate and deactivate the system. Thus, when the controllers leave in the evening they may activate the SuperUnicom system from the control tower so that services will continue, and in the morning, when the Tower opens, the controllers may deactivate the system in the same manner.

Uncontrolled Airports (Non Tower, Un-Controlled Airports): At airports that do not have a control tower (the vast majority of airports, some 12,000 out of 14,000 facilities in the United States), aircraft must rely on either ground-to-pilot (Unicom) or pilot-to-pilot (CTAF) communications for both advisories and radio-checks. For airport management it is a difficulty to repeatedly provide consistent advisories to inbound aircraft. When traffic is very busy other aircraft rarely respond, and when traffic is light, or at non-business hours, typically no information is available at all. Thus information which is critical to aircraft operations is hit or miss at best.

AWOS Systems (Automated Weather Observation System): To address the need for consistent advisories at larger airport facilities the FAA has approved the installation of 1,100 AWOS systems throughout the US, predominantly at major commercial airports. These systems provide an automatic and continuous voice broadcast of winds, temperature, dewpoint, and other data relevant to flight operations. Data is obtained from sensors based near the runway environment. A synthesized voice transmits this data in a predetermined sequence over a discrete communications frequency that is set aside on a facility-by-facility basis.

FAA AWOS STATION "XYZ Airfield, temperature 75, dewpoint 65, wind 240 degrees at 12
(Continuous Transmission) knots, altimeter 30.10"

NOTAM and Manual Weather Advisories Appended to ADVISORY: NOtice To AirMen ("NOTAMS") are critical temporary information provided to pilots. For example a non-standard right hand traffic pattern or special noise abatement procedures are typical NOTAMs; the location of tree and wire obstructions are often sited. Temporary adverse weather, closed runways or taxiways are also possible NOTAM information.

ATIS BROADCAST "XYZ Airfield, temperature 75, dewpoint 65, wind 240 degrees at 12 knots, altimeter 30.10.
Caution, 150ft crane under the approach to runway 24, noise abatement procedures in effect.
Caution, thunderstorms within 3 miles of the field."

"Manual Weather Observations" are short-term warnings of severe weather conditions affecting airport operations such as thunderstorms, tornados, and the like. This information is typically only relevant for short periods of time.

Current Solutions Require Multiple Radio Frequencies: All of the TOWER, ATIS, AWOS and ADVISORY/RADIO-CHECK functions are currently operated on multiple different frequencies, providing the pilot with a series of frequency changes that must be made rapidly as one step proceeds to another. For both redundancy and situations as this most aircraft now have two complete communications radios, each one often capable of switching between two preprogrammed frequencies. Radio management itself has become a major aspect of aircraft operations.

Discrete Frequencies Are Often Unavailable: The complexity of obtaining frequency allocations and the cost and difficulty of installing traditional AWOS systems limits the market to those units the Federal Government is willing and capable of purchasing and installing. The SuperUnicom system simplifies all aspects of obtaining a unit, installing the unit, and responds to the broader needs of both the airport operator as well as the aircraft operating to and from that facility.

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 27

PROBLEM

Radio Frequency Allocation: Licensing of a discrete communications frequency for an AWOS system can take years and often may not be possible at all. Both the FAA and the FCC must approve such frequencies, the committee for which only meets every six months (IRAC). Often there are no discrete frequencies available for such allocations at all.

SOLUTION

Operation on Airport's Existing CTAF Frequency: The vast majority of airports already have a communication frequency allotted to them; either UNICOM having a base station for advisories, or a CTAF for communications between aircraft. The SuperUnicom unit transmits its information over an airport's existing CTAF frequency; thus eliminating the need for additional frequency spectrum.

A particularly convenient aspect of the SuperUnicom operating on the airport's one CTAF frequency is that the pilot no longer needs to be rapidly switching frequencies on multiple radios while also managing the complexity of airport arrival and departure flight operations.

METHOD

System Cannot "Step On" Aircraft Transmissions: The SuperUnicom is continuously monitoring the frequency to which it has been set. Prior to it making any transmissions of any sort the System first verifies that there are no other transmissions on the frequency, thereby eliminating the possibility of "stepping on" an aircraft transmission. In addition, the SuperUnicom's output power is limited to a level over which stronger aircraft radio transmissions will carry and be heard.

Activation by Aircraft's Communication Radios: The SuperUnicom's internal transceiver monitors the airport's CTAF frequency *and only transmits its ADVISORY data upon request by a pilot.* Requests for ADVISORY information are initiated by pilots by clicking their aircraft microphone's push-to-talk switch (PTT) a predetermined number of times. Thus for example, an inbound aircraft may activate the SuperUnicom by three clicks of their microphone; the SuperUnicom then responds with the appropriate ADVISORY data.

AIRCRAFT *"Click, click, click"*

SUPERUNICOM *"XYZ Airfield, Advisory: temperature 75, dewpoint 65, wind 240 degrees at 12 knots, altimeter 30.10, density altitude 3,500."*

Abbreviated Advisory Transmissions During Frequency Congestion: A full set of Advisory information could take as long as 20-30 seconds to transmit in its entirety. When there is congestion on the airport's frequency this is clearly too long an interval for the frequency to be tied up for extensive advisory information. The SuperUnicom answers this problem by monitoring all aircraft transmissions on the frequency and intelligently timing and adjusting its own transmissions to a length and content that is appropriate. The system will not interfere with pilot communications on the airport's CTAF frequency.

SUPERUNICOM (Abbreviated Mode) *"XYZ Airfield, Advisory: wind 240 degrees at 12 knots."*

For example, when Unicom or CTAF is busy with back to back aircraft communications PopUps* will occur only every ten minutes and the ADVISORY data transmission will be limited to wind conditions only. During early morning hours, when there are few transmissions, PopUps will occur only in response to a blind transmission from an inbound aircraft and will with full instructions and ADVISORY information if selected.

ReRequest Provides Full Advisory: In the event that the SuperUnicom has abbreviated its Advisory information such that it has become too brief for a given pilot's needs, the system will respond with a complete Advisory if it receives another request within a short period of completing the first Advisory given.

Frequency Saturation Puts System Into Background: On those occasions that there are back-to-back aircraft transmissions the SuperUnicom will recognize this condition and respond to Advisory Requests with the message:

SUPERUNICOM (Saturated Frequency) *"XYZ Airfield, Advisory, Please Stand By"*

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 28

The system will not respond to further requests until the frequency clears a bit, at which time it will provide one brief Advisory and return to its normal operation.

PROBLEM

Hazardous Airport Conditions: Although hazardous conditions may seem self-evident, often these conditions will not be clearly understood by an inbound pilot based purely on the raw information available. Thus the pilot may be caught unaware of a suddenly critical condition that may otherwise have been anticipated and provided for easily.

SOLUTION

Automated Qualitative Warnings of Hazardous Conditions: The SuperUnicom recognizes those conditions that should be brought to the attention of a pilot, as well as provides the basic information that otherwise indicates these conditions. These are specifically:

High Crosswinds	Winds peaking at over 12 knots within the last 5 minutes that were more than 45 degrees off of the runway heading. The message is then added " <i>Caution, High Crosswinds.</i> "
High Density Altitude	When the Density Altitude is greater than 1,000 above the airport elevation it is then stated in the Advisory to the nearest 100 ft. If the Density Altitude is greater than 5,000 feet absolute then a phrase such as " <i>Caution, Density Altitude 5,700</i> " is always stated with the Advisory.
Possible Ground Fog	If the temperature/dewpoint spread is less than 5 degrees and the winds are calm the phrase " <i>Caution, Possible Ground Fog</i> " is then added to the Advisory information.

PROBLEM

Informing Pilots of How To Use the SuperUnicom: The SuperUnicom is a non-standard system, and as such pilots are not normally trained in its use. There are also no universally read publications that would readily permit informing pilots of the unit's operations.

SOLUTION

Frequency Congestion Sensitive Transmission of Instructions: The SuperUnicom offers a selectable "PopUp" mode. PopUp is a periodic transmission of instructions on the airport's frequency of how to actuate the SuperUnicom unit. For example, at the XYZ Airfield the SuperUnicom may transmit the following message

SUPERUNICOM *"XYZ Unicom, Enter three clicks for ADVISORY, four clicks for Radio check."*

The interval between these transmissions is adjusted for congestion on the airport's communication frequency; the more busy the frequency the less often the instructions are transmitted. In addition, should the frequency become quiet for two minutes these PopUp instruction transmissions will cease until briefly after the next conversation is detected, such as would be made by an inbound aircraft making a blind* call to traffic.

Intermittent PopUp of Advisory Information: The Airport Manager may select to have the SuperUnicom alternate it's PopUp of instructions with complete Advisory data transmissions.

Remains Silent Until After the Last Aircraft or Other Transmission: In all cases PopUP waits for several seconds after the last transmission/communication on the airport's frequency before it will initiate its own transmission, thereby avoiding conflicts with aircraft transmissions. Thus if one aircraft is talking with another, the SuperUnicom will remain silent until after the last of their transmissions are completed, under all conditions.

Remains Silent if No Transmissions Detected: Should the frequency go silent for a lengthy period of time the SuperUnicom recognizes that there is no need for PopUp instructions and remains silent until further communication is detected.

Responds to Isolated Aircraft Call to Traffic with Instructions: Should an isolated aircraft make a call to traffic for Advisories, or any other reason, during an otherwise silent period, the SuperUnicom will respond once with its PopUp instructions a brief period after detecting the isolated call. Thus the inbound pilot making a blind call will be instructed

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 29

on how to activate the SuperUnicom. Further traffic calls of pattern position will not reactivate the SuperUnicom's PopUp feature for another 3 minutes.

Continuous Operation: A continuous transmission mode may also be selected as appropriate. Radio Checks may be performed during the pause between these Advisory transmissions.

PROBLEM

Unreliable or Intermittent Radio-Check: The much needed "Radio Check" is hit-or-miss at most uncontrolled airports, and is a nuisance at tower controlled airports during busy IFR operations.

Pilots may activate the SuperUnicom's "Radio-Echo-Check" feature by clicking their aircraft's microphone, similar to the method for activating the SuperUnicom ADVISORY. The SuperUnicom's "Radio Echo-Check" then asks the pilot to transmit a brief message. The unit records the pilot's next radio transmission and immediately plays it back over the same frequency (Echo-Check). This allows the pilot to *consistently hear and confirm both the transmission and reception quality* of their aircraft's communications radios before departure.

AIRCRAFT *"Click, click, click, click"*

SUPERUNICOM *"Radio Check Activated, Begin Test Transmission"*

AIRCRAFT *"Cessna N86121 radio check"*

SUPERUNICOM *"Cessna N86121 radio check"* (Echoes previous transmission)

PROBLEM

NOTAM & WEATHER OBSERVATIONS: The airport manager, or weather observer, needs to have a convenient means to attach a critical safety message to ADVISORY transmissions when appropriate.

SOLUTION

The SuperUnicom allows the Airport Manager to append a recording to the ADVISORY data. The Airport Manager may click a password and can then transmit any information they feel is appropriate over the radio. The SuperUnicom records this transmission and then appends it onto the SuperUnicom's regular ADVISORY transmissions until it is updated or erased. For the Airport Manager to enter a message they must first enter a password series of clicks, in the example below this password is 8-3-3.

MANAGER *"Click, Click, Click, Click, Click, Click, Click, Click"*

SUPERUNICOM *"Beep"*

MANAGER *"Click, Click, Click"*

SUPERUNICOM *"Beep"*

MANAGER *"Click, Click, Click"*

SUPERUNICOM *"Enter one click for weather, two clicks for notams, three click for barometer."*

MANAGER *"Click"*

SUPERUNICOM *"Enter NOTAM"*

MANAGER *"Caution, thunderstorms within three miles of the airport"*

PROBLEM

Local Altimeter Adjustment: All topographic information as well as aircraft operations are described and controlled in altitude above "mean sea level" (MSL). The correct "Altimeter Setting" for an area must therefore be set prior to an

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 30

aircraft departing the ground (and should be continuously reset during flight where the data is available). The correct altimeter setting is the locally measured barometric pressure, adjusted for altitude.

SOLUTION

Remotely Adjustable Barometric Correction: The SuperUnicom has an internal calibrated barometric sensor which continuously measures the local atmospheric/barometric pressure. As each SuperUnicom is shipped to a specific location a correction factor is incorporated into the system's software for the given airport's elevation. On site this elevation correction may be in slight error as published elevations are taken at only one location on the airport.

The Airport Manager may adjust the SuperUnicom's Altimeter Setting using a radio and their password combination which will permit them to activate the unit's "Set Barometer" option. The unit then starts adding small adjustments to the correction factor and transmits the new setting. During the short pause after the unit transmits the newly corrected Altimeter Setting the Manager may either: Click once and the unit changes the direction of correction, or Click twice and the correction will be stored.

SET BAROMETER

SUPERUNICOM "29.93"

SUPERUNICOM "29.94"

MANAGER` "Click" (Change Direction of count)

SUPERUNICOM "29.93"

MANAGER "Click" (Change Direction of count)

SUPERUNICOM "29.94"

SUPERUNICOM "29.95"

MANAGER "Click, Click"

SUPERUNICOM "29.95. Enter two clicks to confirm"

PROBLEM

Physical Installation / Electrical Power Source: The only advisory systems now available, the FAA Continuous AWOS systems, all require considerable continuous electrical power. These systems also have critical and expensive site location and installation requirements.

Weather sensing units must always be installed near an airport's runway where the wind and other weather data is most appropriate. This is also where continuous power is not readily available. Weather Data from these sensors must then linked back to another structure/building which contains the actual ADVISORY system. Considerable underground conduiting is required and such installations become quite expensive as they must cross considerable distance through and across pavement and concrete.

SOLUTION

Physical Installation: Every airport has a wind sock, the vast majority of which are lighted at night with an airport's runway lights. The SuperUnicom has been made compact and light enough such that the entire unit simply clamps to the airport's existing wind sock pole. The units dimensions are 24h" x 24w" x 16d" and 180 lbs. This one small box contains all of the sensors, control electronics as well as the radio transceiver; the entire system.

Electrical Installation: For electrical power the SuperUnicom unit ties to the runway light circuit at the windsock pole. Thus when the runway lights come on (for a minimum of two hours at night), the unit rapidly recharges its internal battery. It can then operate for up to two days without any further external power. In this manner the unit is powered from the readily available yet intermittent electrical power that is provided for the airport's runway lights. The system's power requirements are also low enough to readily accommodate solar power for very remote installations.

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 31

PROBLEM

What If: As with all things, the SUPERUNICOM is exposed to weather and may be subject to lightning strikes or other indeterminable interference which could "hang" its processors, or otherwise disable the system.

SOLUTION(S)

The "Defibrillator": The SuperUnicom has internal electronics which will automatically reset and reinitialize the entire unit every 120 seconds unless "told" not to by normally operating healthy software. Thus, should for any reason the SuperUnicom cease to function correctly this "Defibrillator" will reset and reinitialize the system.

The "Uh-Oh" Circuit: The SuperUnicom incorporates a circuit which will cleanly shut-down and disconnect the entire system should the internal battery level fall below a critical voltage. This circuit will not reconnect until a proper recharging cycle has begun. Thus the SuperUnicom system always disables itself prior to becoming unstable in any manner.

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 32

APPENDIX E:**FCC APPROVED AVIATION BAND RADIO TRANSCEIVER SPECIFICATIONS**

Manufacturer	Terra Avionics
Model	TPX 720
Communications Channels	720
Frequency Range (25 KHz)	118.000 – 135.975 MHz
Operating Temperature	-20C +50C
Size	3.27W x 1.9D x 9.5H
Weight	2.1 lbs

RECEIVER

Sensitivity	Less than 1 uW for 6db (S+N)/N 118 through 136 MHz Somewhat greater
Selectivity	25 KHz 50db at +20 KHz
Spurious and Image Rejection	Greater than 60db
Squelch Selectivity	3 uV to 200 uV Adjustable Carrier AGC Type

TRANSMITTER

Power Output	
HI	2 Watts Carrier (8 Watts PEP)
LOW	.5 Watts Carrier (2 Watts PEP)
Frequency Stability	.002%
Spurious & Harmonics	Greater than 50db below Carrier
Modulation	
Type	6A3
Percent	80% Min.
Antenna Impedance	50 Ohms

SUPERUNICOM

Interim Developmental Report – May 4, 1994 Page 33

APPENDIX F:

**INDUSTRY COMMENTS
On The
SUPERUNICOM
SYSTEM**



U.S. Department
of Transportation
Federal Aviation
Administration

800 Independence Ave., S.W.
Washington, D.C. 20591

OCT 19 1994

Mr. George Dillion
FCC Private Radio Bureau
Aviation and Marine Branch
Mail Stop 1700C2
Washington, DC 20554

Dear Mr. Dillion:

My staff has informed me that the Federal Communications Commission (FCC) rulemaking on behalf of the SuperUnicom is in progress. The SuperUnicom technology is currently in operation under a Developmental License at Potomac Airfield and Bay Bridge Airport located in the State of Maryland.

The SuperUnicom system sufficiently emulates existing and approved UNICOM/CTAF services. Its use should be currently authorized under existing FCC regulations.

This technology will enhance pilot and public safety by providing landing area advisories on an around-the-clock basis using frequencies which are already assigned. The system will be of greatest importance at airports which do not have operating control towers. I urge the FCC to expedite licensing.

Sincerely,

Original signed by:
ROBERT M. BARTON

Louis C. Cusimano
Acting Manager, General Aviation
and Commercial Division



U.S. Department
of Transportation

800 Independence Ave., S.W.
Washington, D.C. 20591

**Federal Aviation
Administration**

DEC 8 1993

Mr. David Wartofsky
Potomac Airfield
10300 Glen Way
Fort Washington, MD 20744

Dear Mr. Wartofsky:

Thank you for the information on your "SuperUnicom" system.

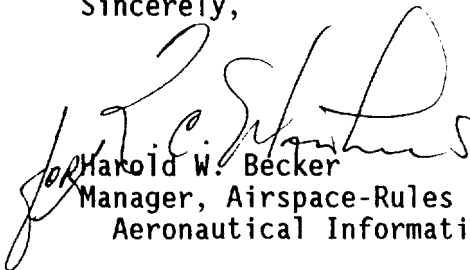
The Federal Aviation Administration (FAA) encourages the establishment and use of UNICOM frequencies for operations at non-towered airports; however, the FAA does not require or regulate UNICOM operations. This is strictly a function of the Federal Communications Commission (FCC) which requires compliance with Part 87 of the FCC regulations for all UNICOM operators. The FCC has the authority to issue an aircraft station license to operate on UNICOM frequencies; any change from the limitations of the original UNICOM license must be coordinated and approved by the FCC.

Additional information on this matter can be obtained from the FCC offices by calling the FCC Consumer Services, Gettysburg, Pennsylvania, on (717) 337-1212.

If you have further questions on this matter, please contact Ellen Crum on extension 7-9859.

We hope this information is helpful.

Sincerely,



Harold W. Becker
Manager, Airspace-Rules and
Aeronautical Information Division



AIRCRAFT OWNERS AND PILOTS ASSOCIATION

421 Aviation Way • Frederick, MD 21701-4798
Telephone (301) 695-2000 • FAX (301) 695-2375

September 16, 1994

George Dillion
FCC Private Radio Bureau
Aviation & Marine
Mail Stop 1700C2
Washington, DC 20554

Dear Mr. Dillion:

The Aircraft Owners and Pilots Association (AOPA) represents over 330,000 pilots who own and operate general aviation aircraft worldwide. AOPA supports the development and implementation of new technology when it demonstrates the potential to enhance safety and efficiency of general aviation operations.

AOPA has reviewed the SUPERUNICOM system, and believes that this system has the potential to enhance safety and efficiency at general aviation airports by providing around-the-clock advisory services over presently assigned Common Traffic Advisory Frequencies (CTAF). This appears to do this without impeding communications the frequency, and does not interfere with the operation of radio-controlled airport lighting.

Accordingly, AOPA encourages the Federal Communications Commission seriously consider authorizing the use of SUPERUNICOM for advisory services under current FCC regulations.

Sincerely,

Douglas S. Helton
Vice President
Regulatory Policy

cc: Mr. David Wartofsky



NATIONAL
BUSINESS AIRCRAFT
ASSOCIATION, INC.

1200 EIGHTEENTH ST., NW (202) 783-9000
SUITE 200 FAX(202) 331-8364
WASHINGTON, DC
20036-2598

April 22, 1994

Mr. George Dillon
FCC Private Radio Bureau
Aviation & Marine Branch
Mail Stop 1700C2
Washington, DC 20554

Dear Mr. Dillon:

The National Business Aircraft Association (NBAA) represents business aviation in the U.S. and is supported by 3300 member companies that operate more than 5000 aircraft. They provide American industry with air transportation services, primarily on a not for profit basis. Sixty percent of the Fortune 500 industrial companies are members of the Association. A significant number of the membership also operate internationally to the benefit of world-wide commerce and trade.

NBAA recently had the opportunity to review and inspect the SUPERUNICOM system now operating at the Potomac Airfield in Prince George's County, Maryland. The system demonstrated has the potential to improve public safety and spectral efficiency by providing all-hours landing area advisories over presently assigned Common Traffic Advisory Frequencies (CTAF).

NBAA is favorably impressed with the system's capabilities. We ask the FCC to amend the appropriate regulatory and licensing requirements of 47CFR as necessary to allow the development and validation required precedent to and ultimate implementation of this technology. We would be pleased to assist in any manner to proceed toward authorizing such technology for aviation's use.

Sincerely,

William H. Stine, II
Senior Manager, International & Flight Technology

cc: David Wartofsky
ws/dwa



GAMA

**General Aviation
Manufacturers Association**

1400 K Street NW, Suite 801
Washington, DC 20005-2485
(202) 393-1500 • Fax (202) 842-4063

May 4, 1994

George Dillon
Federal Communications Commission
Private Radio Bureau
Aviation & Marine Branch
Mail Stop 1700C2
Washington, DC 20554

Dear Mr. Dillon:

I am familiar with the "SuperUnicom" technology developed by Mr. David Wartofsky at Potomac Airfield, Ft. Washington, MD. I understand that a Development License has been issued.

Apparently, the SuperUnicom system sufficiently emulates existing and approved UNICOM/CTAF services. Its use should be currently authorized under existing FCC regulations.

This technology could make a significant contribution to the margin of safety at uncontrolled general aviation airports. I urge the FCC to expedite licensing.

Sincerely,

Ron Swanda
V.P. Operations





DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, DC 20350-2000

IN REPLY REFER TO

Mr. George Dillon
FCC Private Radio Bureau
Aviation & Marine Branch
Mail Stop 1700C2
Washington DC 20554

May 10, 1994

Dear Mr. Dillon,

This is an unsolicited letter of recommendation for the SUPERUNICOM system currently operating at Potomac Airport, MD.

As Head of the Trainer Aircraft and Undergraduate Flight Training Section for the Department of the Navy and perspective Commander, Fighter Wing, U.S. Atlantic Fleet my position requires frequent briefings concerning the acquisition of new aircraft/aviation programs for Naval Aviation. As a private aircraft owner and pilot I relied on this background in my assessment of what I consider a very promising system, the SUPERUNICOM, developed by David Wartofsky.

This system, in conjunction with its projected afford ability, could provide a significant opportunity to enhance "Small Airport" safety. Timely knowledge of environmental conditions is a cornerstone safety parameter for General Aviation. Easy airborne access to current airport environmental information is obviously beneficial and is available at larger airports utilizing ATIS or AWOS. SUPERUNICOM provides similar information by transmitting "on demand" interactive advisory data over the Common Traffic Advisory Frequency (UNICOM). Its operation on the UNICOM frequency, in my opinion, is the key to its success at uncontrolled General Aviation airports.

I most strongly encourage the FCC to expedite the licensing and regulatory process for this needed technology.

Captain Dale O. Snodgrass, USN

cc: David Wartofsky